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<b>UTILITY PATENT APPLICATION TRANSMITTAL</b>  (Only for new nonprovisional applications under 37 CFR 1.53(b))	Attorney Docket No.	744-P-4	Total Pages	
	First Named Inventor or Application Identifier			
	STEPHEN G. NELSON			
	Express Mail Label No.	EM607211969		

<b>APPLICATION ELEMENTS</b> See MPEP chapter 600 concerning utility patent application contents.	<b>ADDRESS TO:</b> Assistant Commissioner for Patents Box Patent Application Washington, DC 20231
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1. <input checked="" type="checkbox"/> Fee Transmittal Form (Submit an original, and a duplicate for fee processing)	6. <input type="checkbox"/> Microfiche Computer Program (Appendix)
2. <input checked="" type="checkbox"/> Specification [Total Pages 13] (preferred arrangement set forth below) - Descriptive title of the invention - Cross References to Related Applications - Statement Regarding Fed sponsored R & D - Reference to Microfiche Appendix - Background of the invention - Brief Summary of the invention - Brief Description of the Drawings (if filed) - Detailed Description - Claim(s) - Abstract of the Disclosure	7. Nucleotide and/or Amino Acid Sequence Submission (if applicable, all necessary) a. <input type="checkbox"/> Computer Readable Copy b. <input type="checkbox"/> Paper Copy (identical to computer copy) c. <input type="checkbox"/> Statement verifying identity of above copies
3. <input checked="" type="checkbox"/> Drawing(s) (35 USC 113) [Total Sheets 3]	<b>ACCOMPANYING APPLICATION PARTS</b> 8. <input type="checkbox"/> Assignment Papers (cover sheet & document(s)) 9. <input type="checkbox"/> 37 CFR 3.73(b) Statement <input type="checkbox"/> Power of Attorney (when there is an assignee) 10. <input type="checkbox"/> English Translation Document (if applicable) 11. <input type="checkbox"/> Information Disclosure Statement (IDS)/PTO-1449 <input type="checkbox"/> Copies of IDS Citations 12. <input type="checkbox"/> Preliminary Amendment 13. <input type="checkbox"/> Return Receipt Postcard (MPEP 503) (Should be specifically itemized) 14. <input checked="" type="checkbox"/> Small Entity <input type="checkbox"/> Statement filed in prior application, Statement(s) <input type="checkbox"/> Status still proper and desired 15. <input type="checkbox"/> Certified Copy of Priority Document(s) (if foreign priority is claimed) 16. <input type="checkbox"/> Other: ..... ..... .....
4. Oath or Declaration [Total Pages ] a. <input checked="" type="checkbox"/> Newly executed (original or copy) b. <input type="checkbox"/> Copy from a prior application (37 CFR 1.63(d)) (for continuation/divisional with Box 17 completed) [Note Box 5 below] i. <input type="checkbox"/> <b>DELETION OF INVENTOR(S)</b> Signed statement attached deleting inventor(s) named in the prior application, see 37 CFR 1.63(d)(2) and 1.33(b).	
5. <input type="checkbox"/> Incorporation By Reference (useable if Box 4b is checked) The entire disclosure of the prior application, from which a copy of the oath or declaration is supplied under Box 4b, is considered as being part of the disclosure of the accompanying application and is hereby incorporated by reference therein.	

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<b>FEE TRANSMITTAL</b>	Complete if Known	
	Application Number	
	Filing Date	
	First Named Inventor	STEPHEN G. NELSON
	Group Art Unit	
	Examiner Name	
TOTAL AMOUNT OF PAYMENT (\$)		395.00
		Attorney Docket Number 744-P-4

METHOD OF PAYMENT (check one)	FEE CALCULATION (continued)																																																																																																																				
<p>1. <input type="checkbox"/> The Commissioner is hereby authorized to charge indicated fees and credit any over payments to:</p> <p>Deposit Account Number <span style="border: 1px solid black; display: inline-block; width: 150px; height: 20px;"></span></p> <p>Deposit Account Name <span style="border: 1px solid black; display: inline-block; width: 150px; height: 20px;"></span></p> <p><input type="checkbox"/> Charge Any Additional Fee Required Under 37 CFR 1.16 and 1.17      <input type="checkbox"/> Charge the Issue Fee Set in 37 CFR 1.18 at the Mailing of the Notice of Allowance, 37 CFR 1.311(b)</p> <p>2. <input checked="" type="checkbox"/> Payment Enclosed:</p> <p style="margin-left: 20px;"><input checked="" type="checkbox"/> Check      <input type="checkbox"/> Money Order      <input type="checkbox"/> Other</p>	<p><b>3. ADDITIONAL FEES</b></p> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">Large Entity Fee Code (\$)</th> <th style="text-align: left;">Small Entity Fee Code (\$)</th> <th style="text-align: left;">Fee Description</th> <th style="text-align: left;">Fee Paid</th> </tr> </thead> <tbody> <tr><td>105 130</td><td>205 65</td><td>Surcharge - late filing fee or oath</td><td></td></tr> <tr><td>127 50</td><td>227 25</td><td>Surcharge - late provisional filing fee or cover sheet</td><td></td></tr> <tr><td>139 130</td><td>139 130</td><td>Non-English specification</td><td></td></tr> <tr><td>147 2,460</td><td>147 2,460</td><td>For filing a request for reexamination</td><td></td></tr> <tr><td>112 900</td><td>112 900</td><td>Requesting publication of SIR prior to Examiner action</td><td></td></tr> <tr><td>113 1,790</td><td>113 1,790</td><td>Requesting publication of SIR after Examiner action</td><td></td></tr> <tr><td>115 110</td><td>215 55</td><td>Extension for response within first month</td><td></td></tr> <tr><td>116 390</td><td>216 195</td><td>Extension for response within second month</td><td></td></tr> <tr><td>117 930</td><td>217 485</td><td>Extension for response within third month</td><td></td></tr> <tr><td>118 1,470</td><td>218 735</td><td>Extension for response within fourth month</td><td></td></tr> <tr><td>119 300</td><td>219 150</td><td>Notice of Appeal</td><td></td></tr> <tr><td>120 300</td><td>220 150</td><td>Filing a brief in support of an appeal</td><td></td></tr> <tr><td>121 260</td><td>221 130</td><td>Request for oral hearing</td><td></td></tr> <tr><td>138 1,470</td><td>138 1,470</td><td>Petition to institute a public use proceeding</td><td></td></tr> <tr><td>140 110</td><td>240 55</td><td>Petition to revive unavoidably abandoned application</td><td></td></tr> <tr><td>141 1,290</td><td>241 645</td><td>Petition to revive unintentionally abandoned application</td><td></td></tr> <tr><td>142 1,290</td><td>242 645</td><td>Utility issue fee (or reissue)</td><td></td></tr> <tr><td>143 440</td><td>243 220</td><td>Design issue fee</td><td></td></tr> <tr><td>144 650</td><td>244 325</td><td>Plant issue fee</td><td></td></tr> <tr><td>122 130</td><td>122 130</td><td>Petitions to the Commissioner</td><td></td></tr> <tr><td>123 50</td><td>123 50</td><td>Petitions related to provisional applications</td><td></td></tr> <tr><td>126 230</td><td>126 230</td><td>Submission of Information Disclosure Stmt</td><td></td></tr> <tr><td>581 40</td><td>581 40</td><td>Recording each patent assignment per property (times number of properties)</td><td></td></tr> <tr><td>146 770</td><td>246 385</td><td>Filing a submission after final rejection (37 CFR 1.129(a))</td><td></td></tr> <tr><td>149 770</td><td>249 385</td><td>For each additional invention to be examined (37 CFR 1.129(b))</td><td></td></tr> <tr><td colspan="3">Other fee (specify) _____</td><td></td></tr> <tr><td colspan="3">Other fee (specify) _____</td><td></td></tr> <tr> <td colspan="2" style="text-align: right;">SUBTOTAL (3) (\$)</td> <td colspan="2"></td> </tr> </tbody> </table>	Large Entity Fee Code (\$)	Small Entity Fee Code (\$)	Fee Description	Fee Paid	105 130	205 65	Surcharge - late filing fee or oath		127 50	227 25	Surcharge - late provisional filing fee or cover sheet		139 130	139 130	Non-English specification		147 2,460	147 2,460	For filing a request for reexamination		112 900	112 900	Requesting publication of SIR prior to Examiner action		113 1,790	113 1,790	Requesting publication of SIR after Examiner action		115 110	215 55	Extension for response within first month		116 390	216 195	Extension for response within second month		117 930	217 485	Extension for response within third month		118 1,470	218 735	Extension for response within fourth month		119 300	219 150	Notice of Appeal		120 300	220 150	Filing a brief in support of an appeal		121 260	221 130	Request for oral hearing		138 1,470	138 1,470	Petition to institute a public use proceeding		140 110	240 55	Petition to revive unavoidably abandoned application		141 1,290	241 645	Petition to revive unintentionally abandoned application		142 1,290	242 645	Utility issue fee (or reissue)		143 440	243 220	Design issue fee		144 650	244 325	Plant issue fee		122 130	122 130	Petitions to the Commissioner		123 50	123 50	Petitions related to provisional applications		126 230	126 230	Submission of Information Disclosure Stmt		581 40	581 40	Recording each patent assignment per property (times number of properties)		146 770	246 385	Filing a submission after final rejection (37 CFR 1.129(a))		149 770	249 385	For each additional invention to be examined (37 CFR 1.129(b))		Other fee (specify) _____				Other fee (specify) _____				SUBTOTAL (3) (\$)			
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SUBMITTED BY				Complete (if applicable)	
Typed or Printed Name	GREGORY J. NELSON			Reg. Number	22,066
Signature				Date	3/9/98
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Title of the Invention

ONE-WAY SEE-THRU PANEL AND METHOD OF MAKING SAME

Background of the Invention

Field of the Invention

5           This application is based on Provisional Patent Application Serial No. 60/036,678, filed March 11, 1997 entitled "Method For Manufacturing One-Way See-Thru Films".

See-thru or one-way films have become well known and are used for various purposes, mainly advertising displays. Most see-thru films are fabricated having a substrate which is perforated and which is coated on one side with a black pigment. The opposite side is white opaque and printed with an image and conventional practice is to print the image by use of silkscreening or lithography. The perforations permit viewing in one direction which is substantially unobstructed.

The white opaque surface receives the image which is viewable from the opposite side. For example, see Patent Nos. 4,883,556 and 4,940,622 to Leavitt which teach silkscreening a perforated substrate. Similarly, U.S. Patent No. 5,525,177 teaches a printing or image transfer method using an electrostatic process in which a reverse image is transferred to a surface of a perforated membrane.

Background of the Invention

20           The problem with using conventional printing methods such as screen printing is that screen printing is not cost effective for short runs, is time

consuming and the resulting product while acceptable, does not have a high quality of resolution. Also, screen printing images cannot be tiled for unique one-of-a-kind graphics. Similarly, deficiencies exist with electrostatic processes.

Electrostatic printing is applicable to short-run graphics. However, the equipment necessary for electrostatic printing is much more expensive than silkscreening, thermal or piezo ink jet printing and is more complicated involving the use of a laminator to transfer the printed image to an electrostatically charged substrate.

The present invention relates to an improved method for producing or imaging see-thru panels or films with ink jet technology. See-thru films have the advantage that an image may be applied and viewed from one side and, because of the perforations, substantial light passes through the film allowing the viewer relatively unobstructed vision from the opposite side. Thus, see-thru films are widely used on such advertising applications as the signage applied to the sides of vehicles such as buses, allowing the passengers a relatively unobstructed view. See-thru films are also used where visibility for security purposes is important. Glass panels such as windows and cooler cases are other typical applications for these types of film.

#### Brief Summary of the Invention

Briefly, the present invention provides a high resolution, see-thru, one-way vision panel manufactured using an opaque substrate which may be polyester, vinyl

or a polyolefin and which is outdoor durable. Preferably the substrate is pigmented with a white opaque pigment. The substrate is coated on one side, the rear side, with a black pigmented adhesive which is protected by a release liner such as silicon coated paper. Once the adhesive and release liner are applied, the substrate is perforated to create a distinct hole pattern. The perforations can be accomplished by using a mechanical or laser perforating process. Typically, the hole pattern consists of 1/16" diameter holes which are staggered 3/32" from one another but other patterns may be applied. The opposite or front side of the substrate is chemically treated to encapsulate dyes and pigmented inks. Synthetic films, such as polyesters and vinyls which are not top-coated, will not absorb certain types of ink, particularly dye based and pigmented inks. Top coatings such as clays, resins, gels and latex combination coatings are best. Another embodiment of the invention involves the application of solvent based inks to form an image on the substrate, the application of which does not require top coating.

#### Brief Description of the Drawings

Figure 1 is a cross-sectional view showing a one-way panel manufactured and imaged according to the invention;

Figure 2 is an enlarged cross-sectional view of the panel shown in Figure 1; and

Figure 3 is a schematic diagram of the method of the invention.

Turning now to the drawings, Figures 1 and 2 show a cross section of a typical panel 10 according to the invention. The panel 10 includes a substrate 12 which is a polymeric film such as a polyester or preferably vinyl sheet material having a typical thickness of 4 mils. The substrate 12 may be transparent or opaque although opaque having a white colorization is preferred. In lieu of using an opaque substrate, the front surface may be flood coated with a white or light reflecting screen printing or the like.

The rear surface is coated with an adhesive layer 14. "Rear" as used herein refers to the surface which would normally be applied to a surface such as glass store front as signage. The image is viewed from the front and when the panel 10 is viewed from the rear, see-through vision is provided due to passage of light through perforations 16. The image on the front is not visible from the rear.

The adhesive layer 14 is pigmented with a black or light-absorbing pigment. The adhesive is preferably an acrylic adhesive which may be applied by conventional methods such as rolling or spraying. The adhesive layer 14 is then covered with a peelable release liner 20 such as a silicone coated paper which is removed to expose the adhesive at the time of application. The liner 20 is generally roll fed and applied by a pressure roller.

Perforations 16 extend through the release liner and the release liner is backed with a barrier film 22 which prevents bleed through of inks when the image is applied. Both the release liner 20 and barrier 22 are removed at the time the

panel is installed. The front surface is then top coated with a coating 25 which will absorb ink of the type applied by jet inks and enhance UV durability, stability and weather resistance. Dye-based ink jet inks are not generally used for outdoor applications because of their tendency to fade in sunlight and to be detrimentally effected by water. With the present invention, ink jet printing techniques, either piezo or thermal, which are fast and less expensive than e-stat, can be utilized for applications such as exterior signs and particularly one-way vision panels.

The top coating may be selected from various materials which adhere to the polymeric substrate and which will absorb and encapsulate the ink jet dye. Representative of such top coats are clays, gels and resins such those manufactured by Precision Coatings, Inc. under the *Renaissance*™ trademark. American Coating Technology also markets a similar coating designated *Protecoat Formulation #4119*.

After top coating, the assembly is perforated using either conventional mechanical punching with dies or punches or by laser perforating in the desired pattern as described more fully in U.S. Patent No. 5,550,346.

After perforating, an impermeate barrier 22 is applied to the rear of the assembly. The barrier 22 and release liner 20 will be removed at the time of application. However, the barrier 22 prevents spray through of dyes at the time the image is applied to the front surface. Also, use of the impermeate barrier facilitates handling of the material by use of vacuum tables and equipment thus making handling much more efficient.

Figure 3 illustrates the process described above in schematic format.

The following are examples of one-way, see-through substrates manufactured according to the present invention:

#### Example 1

5 A top-coated polyester of the type manufactured by Sumner & Taylor, a member of the SIHL Group, designated Photomatte Waterproof PMW was utilized. The pigmented acrylic based adhesive of the type manufactured by Mac-Tac was gravure-coated on the back of the film and laminated with a suitable release liner, in this case 110# silicone coated paper.

10 Thereafter, the substrate with attached release liner and adhesive was perforated using a mechanical perforating die to apply a hole pattern of 1/16" diameter holes staggered on 3/32" centers. After laminating, a nonperforated backing was applied to the back or exposed side of the release paper. The backing was a 1.7 mil. polyester. Printing was accomplished by using a computer-controlled ink jet printer. Several types of large format ink jet printers are available such as  
15 the one manufactured by Encad, such as the Encad Novajet Pro Printer are acceptable. Other similar printers are available such as the Hewlett Packard Design Jet 2000, which is a cartridge color ink jet printer, accommodating papers or substrates up to 36" wide and with color resolution up to 600 dpi. These  
20 printers are thermal which require heating the ink. Piezo technology printers are relatively new and may also be used. The desired image is applied with the



nonperforated vinyl backing preventing "spray through" of the ink because of its absorbency. After the image is applied, the substrate is ready for application. At the point of application, the perforated release liner and the nonperforated backing are removed and the substrate may be applied directly to a surface such as a window.

### Example 2

A top-coated polyester, again Photomatte Waterproof PMW available from Sumner & Taylor of the SIHL Group was utilized. The substrate was perforated, again using conventional perforating dies to apply a distinct hole pattern as for example 1/16" diameter holes staggered at 3/32".

Again, perforating one side of the substrate was coated with an adhesive and a nonperforated release liner was laminated over the adhesive.

The image is then applied again using an ink jet printer such as the Hewlett Packard Design Jet 750C large format printer. The latter example is less expensive to manufacture than that described in Example 1 as it utilizes a single nonperforated liner which is removed at the time of application.

While the principles of the invention have been made clear in the illustrative embodiments set forth above, it will be obvious to those skilled in the art to make various modifications to the structure, arrangement, proportion, elements, materials and components used in the practice of the invention. To the extent that these

various modifications do not depart from the spirit and scope of the appended claims, they are intended to be encompassed therein.

I CLAIM:

3660760

CLAIMS:

1. A method for producing a one-way see-thru panel assembly comprising:

- (a) providing an opaque light colored substrate having opposite first and second surfaces;
- (b) applying a dark pigmented adhesive to the first surface of said substrate;
- (c) applying a release liner over said adhesive;
- (d) top coating said second surface with an inkjet ink encapsulating substance;
- (e) perforating the top-coated substrate and release liner with a distinct hole pattern;
- (f) applying an imperforate barrier over the release liner; and
- (g) applying an image to the second surface by using an ink jet applicator.

2. The method of Claim 1 wherein said substrate is selected from the group consisting of polyesters, vinyl and polyolefin films.

3. The method of Claim 1 wherein said top coating is selected from the group consisting of clays, gels, resins and latex combination coatings.

4. A method of producing signage for application to a transparent surface comprising:

- (a) providing a polymeric light colored opaque substrate having opposite first and second surfaces;
- (b) applying a pigmented adhesive to the first surface;
- (c) applying a release liner over said adhesive;
- (d) top coating said second surface with an inkjet ink encapsulating substance;
- (e) perforating the top-coated substrate and release liner with a distinct hole pattern;
- (f) laminating an imperforate barrier over the release liner;
- (g) applying an image to the second surface by using an ink jet applicator;
- (h) removing the barrier and release lining to expose the adhesive; and
- (i) contacting the adhesive with said transparent surface.

5. The method of Claim 4 wherein said ink jet applicator applies an ink selected from the group consisting of dye based ink, pigmented ink and solvent based inks.

6. The method of Claim 4 wherein said ink jet applicator is a piezo ink jet applicator.

7. The method of Claim 4 wherein said ink jet applicator is a thermal ink jet applicator.

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- 5
8. A one-way, see-through panel for application to a surface comprising:
- (a) an opaque light-reflecting substrate having opposite first and second surfaces;
  - (b) a pigmented adhesive layer on said first surface;
  - (c) a release liner over said adhesive layer;
  - (d) said substrate and liner defining a pattern of spaced-apart perforations;
  - (e) an imperforate barrier film covering said release liner.

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9. The panel of Claim 8 wherein an ink jet printed image is applied to said first surface.

10. The panel of Claim 9 wherein said first surface is top coated with an ink encapsulating substance.

### Abstract of the Disclosure

5 A see-through, one-way panel having a white opaque substrate with a dark pigmented adhesive on the rear side. The pigmented adhesive is covered with a release liner. The substrate, adhesive and liner are perforated and thereafter an imperforate barrier is laminated over the release liner. The front surface may be top coated to accept a dye based ink. The front surface is printed with an image by thermal or piezo ink jet printing technology. The resulting panel may then be adhesively applied to a surface.

10

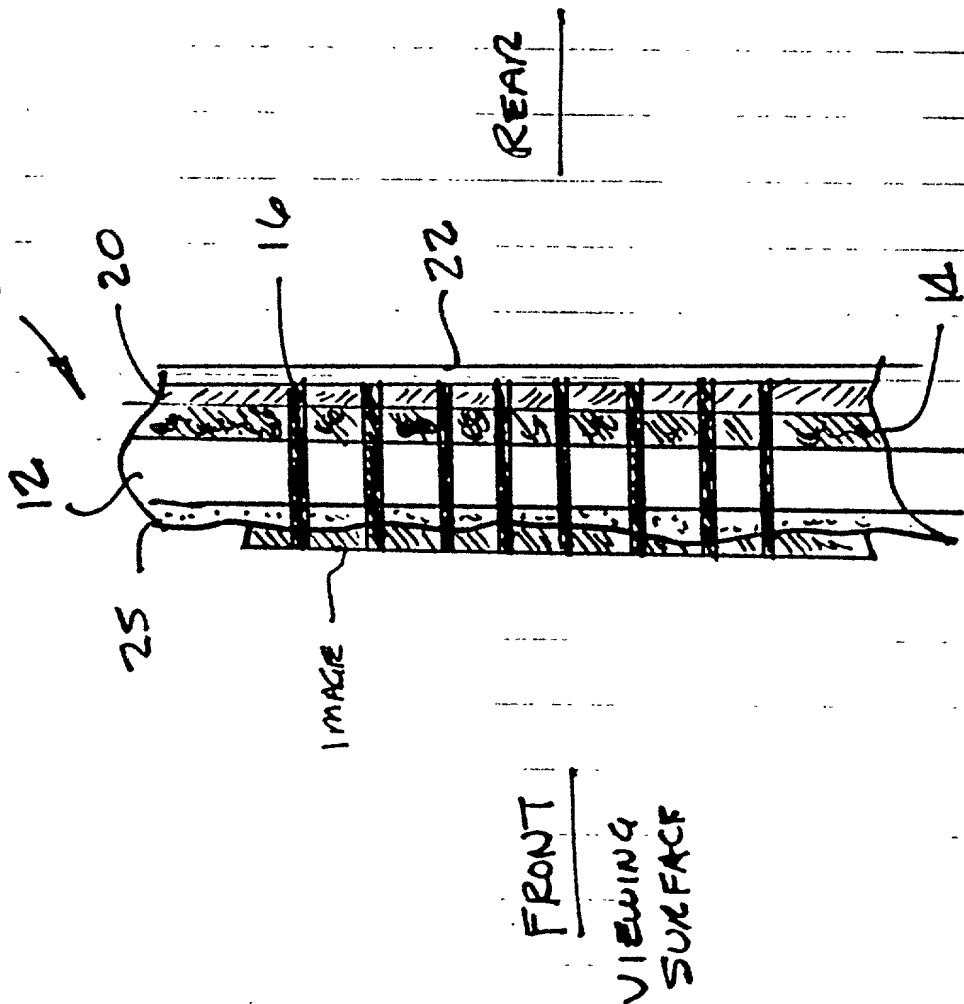


FIGURE 1



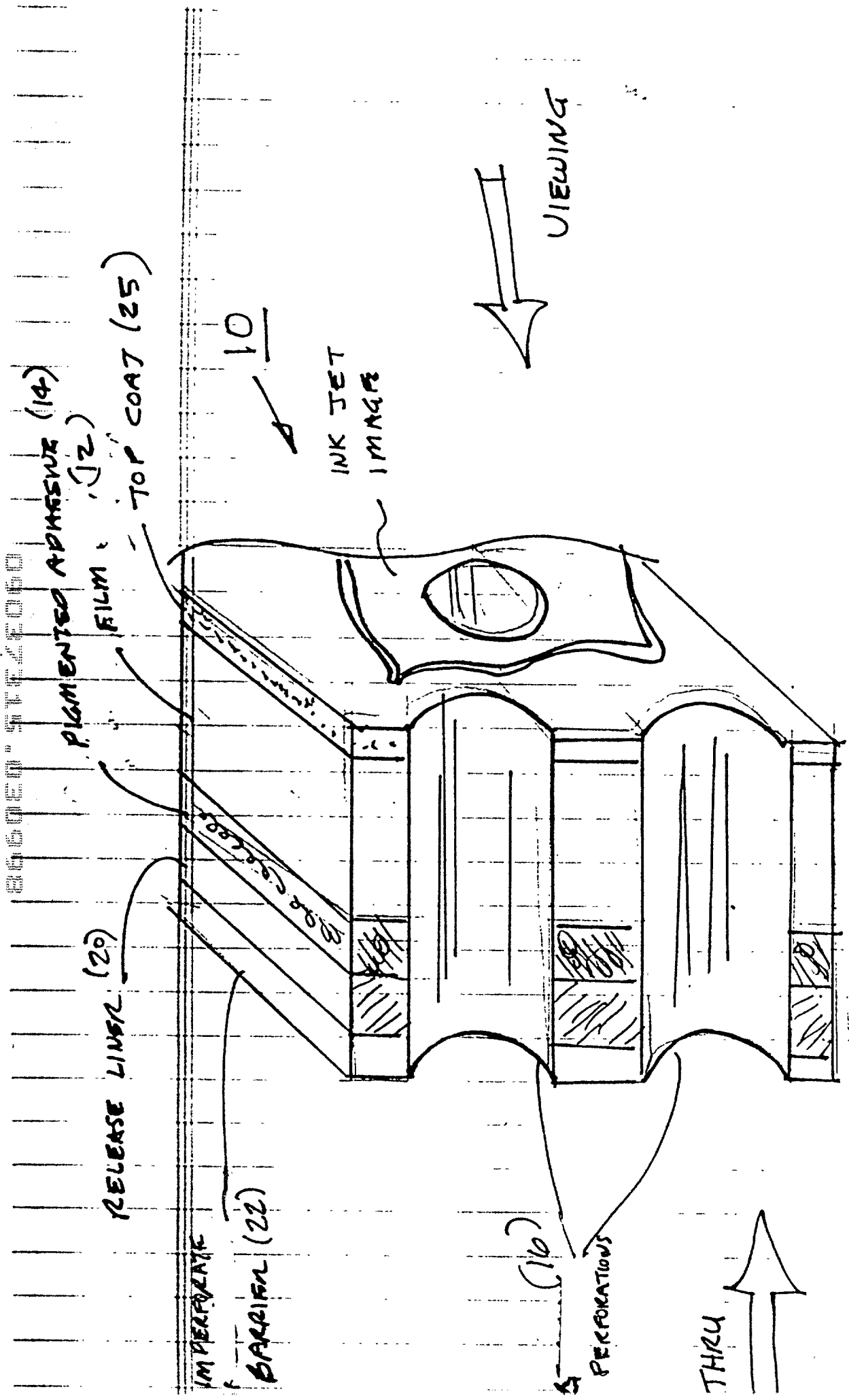


FIGURE 2

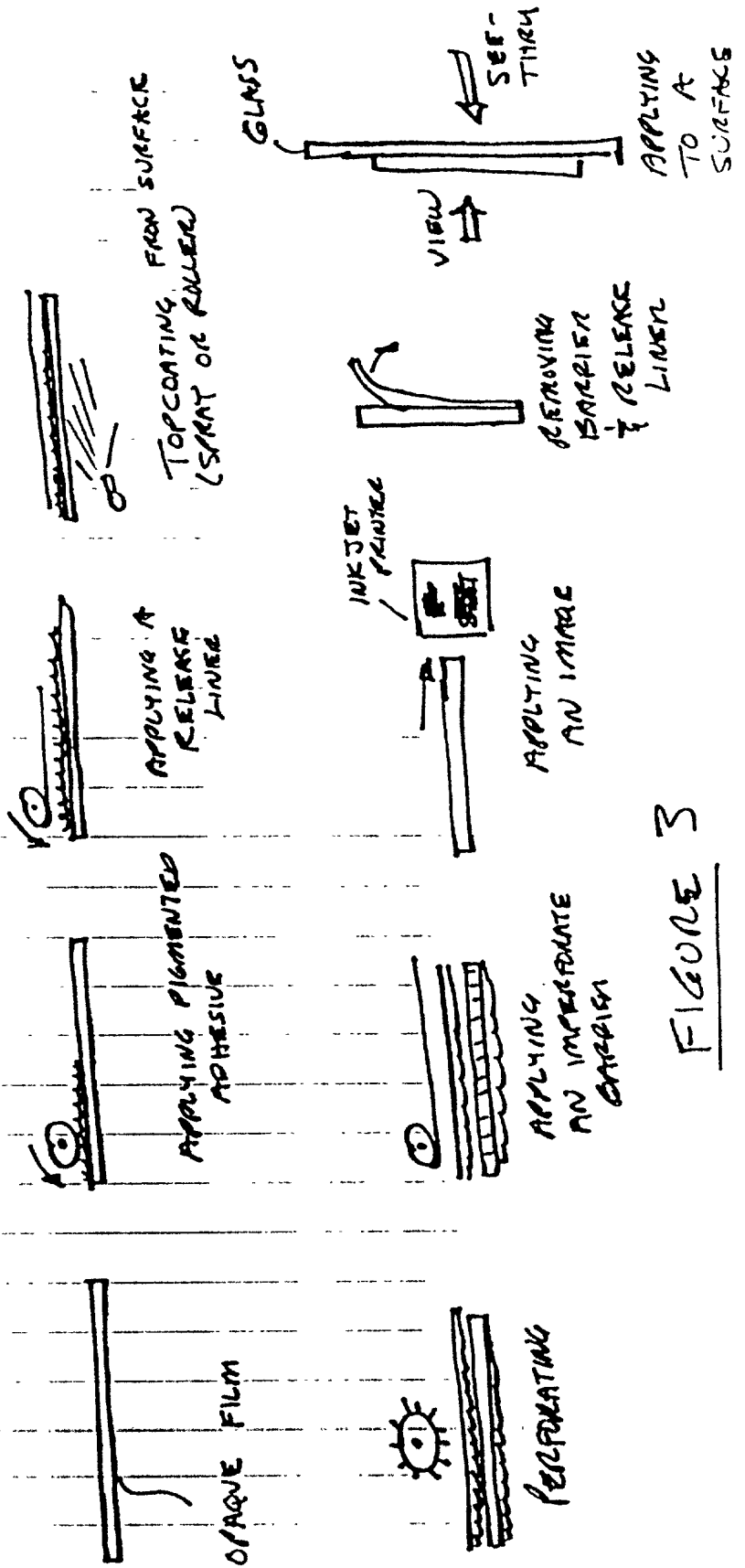


FIGURE 3

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**COMBINED DECLARATION AND POWER OF ATTORNEY**

(ORIGINAL, DESIGN, NATIONAL STAGE OF PCT, SUPPLEMENTAL, DIVISIONAL,  
CONTINUATION OR C-I-P)

---

As a below named inventor, I hereby declare that:

**TYPE OF DECLARATION**

This declaration is of the following type:

(check one applicable item below)

- ☒ original.
- ☐ design.
- ☐ supplemental.

*NOTE: If the declaration is for an International Application being filed as a divisional, continuation or continuation-in-part application, do not check next item; check appropriate one of last three items.*

- ☐ national stage of PCT.

*NOTE: If one of the following 3 items apply, then complete and also attach ADDED PAGES FOR DIVISIONAL, CONTINUATION OR C-I-P.*

- ☐ divisional.
- ☐ continuation.
- ☐ continuation-in-part (C-I-P).

**INVENTORSHIP IDENTIFICATION**

**WARNING:** *If the inventors are each not the inventors of all the claims, an explanation of the facts, including the ownership of all the claims at the time the last claimed invention was made, should be submitted.*

My residence, post office address and citizenship are as stated below, next to my name. I believe that I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter that is claimed, and for which a patent is sought on the invention entitled:

**TITLE OF INVENTION**

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ONE-WAY SEE-THRU PANEL AND METHOD OF MAKING SAME

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## SPECIFICATION IDENTIFICATION

the specification of which:

(complete (a), (b) or (c))

(a) ☒ is attached hereto.

NOTE: "The following combinations of information supplied in an oath or declaration filed on the application filing date with a specification are acceptable as minimums for identifying a specification and compliance with any one of the items below will be accepted as complying with the identification requirement of 37 CFR 1.63:

"(1) name of inventor(s), and reference to an attached specification which is both attached to the oath or declaration at the time of execution and submitted with the oath or declaration on filing;

"(2) name of inventor(s), and attorney docket number which was on the specification as filed;  
or

"(3) name of inventor(s), and title which was on the specification as filed."

Notice of July 13, 1995 (1177 O.G. 60).

(b) ☐ was filed on \_\_\_\_\_, as ☐ Serial No. 0 / \_\_\_\_\_  
or ☐ \_\_\_\_\_  
and was amended on \_\_\_\_\_ (if applicable).

NOTE: Amendments filed after the original papers are deposited with the PTO that contain new matter are not accorded a filing date by being referred to in the declaration. Accordingly, the amendments involved are those filed with the application papers or, in the case of a supplemental declaration, are those amendments claiming matter not encompassed in the original statement of invention or claims. See 37 CFR 1.67.

NOTE: "The following combinations of information supplied in an oath or declaration filed after the filing date are acceptable as minimums for identifying a specification and compliance with any one of the items below will be accepted as complying with the identification requirement of 37 CFR 1.63:

"(1) name of inventor(s), and application number (consisting of the series code and the serial number; e.g., 08/123,456);

"(2) name of inventor(s), serial number and filing date;

"(3) name of inventor(s) and attorney docket number which was on the specification as filed;

"(4) name of inventor(s), title which was on the specification as filed and filing date;

"(5) name of inventor(s), title which was on the specification as filed and reference to an attached specification which is both attached to the oath or declaration at the time of execution and submitted with the oath or declaration; or

"(6) name of inventor(s), title which was on the specification as filed and accompanied by a cover letter accurately identifying the application for which it was intended by either the application number (consisting of the series code and the serial number; e.g., 08/123,456), or serial number and filing date. Absent any statement(s) to the contrary, it will be presumed that the application filed in the PTO is the application which the inventor(s) executed by signing the oath or declaration."

Notice of July 13, 1995 (1177 O.G. 60).

(c) ☐ was described and claimed in PCT International Application No. \_\_\_\_\_, filed on \_\_\_\_\_ and as amended under PCT Article 19 on \_\_\_\_\_ (if any).

## ACKNOWLEDGEMENT OF REVIEW OF PAPERS AND DUTY OF CANDOR

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose information, which is material to patentability as defined in 37, Code of Federal Regulations, § 1.56,

*(also check the following items, if desired)*

- ☒ and which is material to the examination of this application, namely, information where there is a substantial likelihood that a reasonable Examiner would consider it important in deciding whether to allow the application to issue as a patent, and
- ☐ In compliance with this duty, there is attached an information disclosure statement, in accordance with 37 CFR 1.98.

### PRIORITY CLAIM (35 U.S.C. § 119(a)-(d))

I hereby claim foreign priority benefits under Title 35, United States Code, § 119(a)-(d) of any foreign application(s) for patent or inventor's certificate or of any PCT international application(s) designating at least one country other than the United States of America listed below and have also identified below any foreign application(s) for patent or inventor's certificate or any PCT international application(s) designating at least one country other than the United States of America filed by me on the same subject matter having a filing date before that of the application(s) of which priority is claimed.

*(complete (d) or (e))*

- (d) ☐ no such applications have been filed.
- (e) ☒ such applications have been filed as follows.

NOTE: Where item (c) is entered above and the International Application which designated the U.S. itself claimed priority check item (e), enter the details below and make the priority claim.

**PRIOR FOREIGN/PCT APPLICATION(S) FILED WITHIN 12 MONTHS  
(6 MONTHS FOR DESIGN) PRIOR TO THIS APPLICATION  
AND ANY PRIORITY CLAIMS UNDER 35 U.S.C. § 119(a)-(d)**

COUNTRY (OR INDICATE IF PCT)	APPLICATION NUMBER	DATE OF FILING (day, month, year)	PRIORITY CLAIMED UNDER 37 USC 119
			<input type="checkbox"/> YES    NO <input type="checkbox"/>
			<input type="checkbox"/> YES    NO <input type="checkbox"/>
			<input type="checkbox"/> YES    NO <input type="checkbox"/>
			<input type="checkbox"/> YES    NO <input type="checkbox"/>
			<input type="checkbox"/> YES    NO <input type="checkbox"/>

**CLAIM FOR BENEFIT OF PRIOR U.S. PROVISIONAL APPLICATION(S)**  
(34 U.S.C. § 119(e))

I hereby claim the benefit under Title 35, United States Code, § 119(e) of any United States provisional application(s) listed below:

**PROVISIONAL APPLICATION NUMBER**

**FILING DATE**

60 / 036,678  
 \_\_\_\_\_ / \_\_\_\_\_  
 \_\_\_\_\_ / \_\_\_\_\_

3/11/97  
 \_\_\_\_\_  
 \_\_\_\_\_

**CLAIM FOR BENEFIT OF EARLIER US/PCT APPLICATION(S)  
UNDER 35 U.S.C. 120**

- ☐ The claim for the benefit of any such applications are set forth in the attached ADDED PAGES TO COMBINED DECLARATION AND POWER OF ATTORNEY FOR DIVISIONAL, CONTINUATION OR CONTINUATION-IN PART (C-I-P) APPLICATION.

**ALL FOREIGN APPLICATION(S), IF ANY, FILED MORE THAN 12 MONTHS  
(6 MONTHS FOR DESIGN) PRIOR TO THIS U.S. APPLICATION**

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**NOTE:** *If the application filed more than 12 months from the filing date of this application is a PCT filing forming the basis for this application entering the United States as (1) the national stage, or (2) a continuation, divisional, or continuation-in-part, then also complete ADDED PAGES TO COMBINED DECLARATION AND POWER OF ATTORNEY FOR DIVISIONAL, CONTINUATION OR C-I-P APPLICATION for benefit of the prior U.S. or PCT application(s) under 35 U.S.C. § 120.*

**POWER OF ATTORNEY**

I hereby appoint the following attorney(s) and/or agent(s) to prosecute this application and transact all business in the Patent and Trademark Office connected therewith.

*(list name and registration number)*

GREGORY J. NELSON            REG. NO. 22,066  
JOSEPH H. ROEDIGER        REG. NO. 22,715

*(check the following item, if applicable)*

- ☐ Attached, as part of this declaration and power of attorney, is the authorization of the above-named attorney(s) to accept and follow instructions from my representative(s).

---

**SEND CORRESPONDENCE TO**

GREG NELSON  
NELSON & ROEDIGER  
2623 NORTH 7TH STREET  
PHOENIX, AZ 85006

**DIRECT TELEPHONE CALLS TO:**  
*(Name and telephone number)*

GREG NELSON  
(602) 263-8782

---

**DECLARATION**

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

(Declaration and Power of Attorney [1-1]—page 5 of 7)

20250315 15:22:00

## DECLARATION

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

## SIGNATURE(S)

NOTE: Carefully indicate the family (or last) name, as it should appear on the filing receipt and all other documents.

Full name of sole or first inventor

STEPHEN  
(GIVEN NAME)

G.  
(MIDDLE INITIAL OR NAME)

NELSON  
(FAMILY (OR LAST) NAME)

Inventor's signature

Date 3/9/98

Country of Citizenship United States of America

Residence Phoenix, Arizona U.S.A.

Post Office Address 4828 North 31st Street  
Phoenix, AZ 85016

Full name of second joint inventor, if any

(GIVEN NAME)

(MIDDLE INITIAL OR NAME)

FAMILY (OR LAST NAME)

Inventor's signature

Date Country of Citizenship

Residence

Post Office Address

Full name of third joint inventor, if any

(GIVEN NAME)

(MIDDLE INITIAL OR NAME)

FAMILY (OR LAST NAME)

Inventor's signature

Date Country of Citizenship

Residence

Post Office Address

(Declaration and Power of Attorney [1-1]—page 6 of 7)



Year	Total population		Urban population		Rural population		Total population		Urban population		Rural population	
	Population	Density	Population	Density	Population	Density	Population	Density	Population	Density	Population	Density
1950	100 000 000	100	50 000 000	50	50 000 000	50	100 000 000	100	50 000 000	50	50 000 000	50
1955	105 000 000	105	52 500 000	52.5	52 500 000	52.5	105 000 000	105	52 500 000	52.5	52 500 000	52.5
1960	110 000 000	110	55 000 000	55	55 000 000	55	110 000 000	110	55 000 000	55	55 000 000	55
1965	115 000 000	115	57 500 000	57.5	57 500 000	57.5	115 000 000	115	57 500 000	57.5	57 500 000	57.5
1970	120 000 000	120	60 000 000	60	60 000 000	60	120 000 000	120	60 000 000	60	60 000 000	60
1975	125 000 000	125	62 500 000	62.5	62 500 000	62.5	125 000 000	125	62 500 000	62.5	62 500 000	62.5
1980	130 000 000	130	65 000 000	65	65 000 000	65	130 000 000	130	65 000 000	65	65 000 000	65
1985	135 000 000	135	67 500 000	67.5	67 500 000	67.5	135 000 000	135	67 500 000	67.5	67 500 000	67.5
1990	140 000 000	140	70 000 000	70	70 000 000	70	140 000 000	140	70 000 000	70	70 000 000	70
1995	145 000 000	145	72 500 000	72.5	72 500 000	72.5	145 000 000	145	72 500 000	72.5	72 500 000	72.5
2000	150 000 000	150	75 000 000	75	75 000 000	75	150 000 000	150	75 000 000	75	75 000 000	75
2005	155 000 000	155	77 500 000	77.5	77 500 000	77.5	155 000 000	155	77 500 000	77.5	77 500 000	77.5
2010	160 000 000	160	80 000 000	80	80 000 000	80	160 000 000	160	80 000 000	80	80 000 000	80
2015	165 000 000	165	82 500 000	82.5	82 500 000	82.5	165 000 000	165	82 500 000	82.5	82 500 000	82.5
2020	170 000 000	170	85 000 000	85	85 000 000	85	170 000 000	170	85 000 000	85	85 000 000	85
2025	175 000 000	175	87 500 000	87.5	87 500 000	87.5	175 000 000	175	87 500 000	87.5	87 500 000	87.5
2030	180 000 000	180	90 000 000	90	90 000 000	90	180 000 000	180	90 000 000	90	90 000 000	90
2035	185 000 000	185	92 500 000	92.5	92 500 000	92.5	185 000 000	185	92 500 000	92.5	92 500 000	92.5
2040	190 000 000	190	95 000 000	95	95 000 000	95	190 000 000	190	95 000 000	95	95 000 000	95
2045	195 000 000	195	97 500 000	97.5	97 500 000	97.5	195 000 000	195	97 500 000	97.5	97 500 000	97.5
2050	200 000 000	200	100 000 000	100	100 000 000	100	200 000 000	200	100 000 000	100	100 000 000	100

- ✱   ✱   ✱

- ★ ★ ★

- ★ ★ ★

- ✱   ✱   ✱

- ☐ Number of pages added \_\_\_\_\_

- ◆ ◆ ◆

- ✱   ✱   ✱

☒ This declaration ends with this page.



I acknowledge the duty to file, in this application or patent, notification of any change in status resulting in loss of entitlement to small entity status prior to paying, or at the time of paying, the earliest of the issue fee or any maintenance fee due after the date on which status as a small entity is no longer appropriate. (37 CFR 1.28(b))

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further, that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application, any patent issuing thereon, or any patent to which this verified statement is directed.

STEPHEN G. NELSON

Name of inventor

Signature of Inventor

Date

3/9/98

Name of inventor

Signature of Inventor

Date

Name of inventor

Signature of Inventor

Date

(Small Entity—Independent Inventor [7-1]—page 2 of 2)